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ABSTRACT

The long range plan outlined in this report is intended to influence the design of services in school and classroom environments in order to promote consistency of use of educational technology across diverse regions and school settings in California. The introduction discusses some of the major needs facing education today, and mandates, general principles, and leadership strategies of the state's 1983 Educational Technology Local Assistance Program are described. The concluding section presents the goals, a background statement, the objectives, and implementation strategies for the six program components that provide the structure for implementation of the plan: (1) technology-infused demonstration schools; (2) leadership; (3) staff development; (4) instructional materials; (5) hardware; and (6) facilities. (MES)

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LONG-RANGE EDUCATIONAL TECHNOLOGY PLAN

FOR CALIFORNIA SCHOOLS

Prepared by the Educational Technology Committee (Chapter 1133, Statutes of 1983) and submitted to the Superintendent of Public Instruction for consideration by the Superintendent of Public Instruction and the State Board of Education
October 23, 1986

Adopted by the State Board of Education
November 14, 1986

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California Educational Technology Long-Range Plan

I. INTRODUCTION

PURPOSE FOR THIS LONG-RANGE PLAN

The primary purpose of this Educational Technology Long-Range Plan is to provide a guide for state and local education administrators, teachers, parent and community groups, business leaders, and others who are interested in planning and implementing technology-infused educational programs. The plan is intended to influence the design of services in school and classroom environments in order to promote a general consistency of use of educational technology across the diverse regions and school settings in California.

MAJOR NEEDS FACING EDUCATION: EDUCATIONAL REFORM IN CALIFORNIA

The need for restructuring and revitalizing America's educational system has been documented eloquently by many recent reports and studies, including "A Nation At Risk", "Who will Teach Our Children", and most recently, the report of the Carnegie Forum, "A Nation Prepared: Teachers for the 21st Century." These documents detail a variety of critical issues that are magnified in California because of the enormous scope of the state's educational enterprise.

One of the common themes that these documents address is the need to upgrade the quality of the school curriculum and our standards regarding not only the content, but also the processes that all students should be expected to master. These national reports recommend that we undertake significant efforts to provide teachers with the skills and commitment to address these changes. They also suggest that the basic content of the curriculum must be revitalized in order to provide students with the educational tools to be successful citizens and workers in the 21st century.

The use of educational technology can contribute to programs designed to address these critical needs. Technology-based instructional materials are significant to achieving an upgraded core curriculum. Indeed, as the availability of technology increases, significant changes in the curriculum are likely to occur. Technology-based "distance learning" services can be utilized to assist in comprehensive staff development programs needed to support a new generation of 100,000 teachers which will be recruited in the next five years. Electronic bulletin boards and data management systems specifically designed for school use can help administrators and teachers handle routine, time-consuming, administrative and management tasks with a high degree of efficiency.

These are only a few examples of potential support that educational technology, introduced in a carefully planned manner, can contribute to educational reform efforts. This plan provides goals, objectives, and strategies that are designed to improve California's educational system in significant ways, ways that will likely result in "schools of the future." However, it must also be recognized explicitly that the planned integration of technology into the schools and classrooms should be undertaken in a manner that is consistent with state and local curriculum improvement efforts. This plan does not assume that technology-based programs alone will address the complexity of needs faced by schools throughout the state.

II. THE EDUCATIONAL TECHNOLOGY LOCAL ASSISTANCE PROGRAM

During the past three years, the Legislature has demonstrated its belief that technology and technology-based curriculum materials should be infused into the educational system in support of comprehensive educational reform. In 1983, the Legislature enacted Assembly Bill 803 (Chapter 1133, Statutes of 1983) which authorized an expanded Educational Technology Local Assistance Program. During the same year, the Hughes-Hart Educational Reform Act formally established the California network of Teacher Education and Computer Centers and noted that teacher training must include an emphasis on the effective use of technology. Since 1983, financial support for these efforts has increased substantially and these state funds now provide a significant base of support to help schools take advantage of technology-based resources to improve their instructional services.

LEGISLATIVE PROGRAM MANDATES

In adopting AB 803, the Legislature specified several essential intentions for the new Educational Technology Local Assistance Program. These mandates provide important philosophical parameters for the use of electronic technology in education. They are:

Coordination: There should be a coordinated basis or structure for all segments of the public education system to respond to the needs of California's population.

Business and Industry Involvement: All segments of public education should seek to involve the industrial sector, where such involvement will serve to enhance the responsiveness of technology-based education to the needs of students.

Preparation of Students for Employment: Education should lead to remunerative employment for our youth; and to do so, California students need strong reading, math, science, and technological skills. Public education should prepare a technologically-literate work force to meet projected and even unanticipated labor needs for business and industry.

Equity: All California students will have equitable access to instructional programs which provide these skills.

GENERAL PRINCIPLES

In addition to these legislative mandates, the Department of Education, in conjunction with the Educational Technology Committee, a state advisory committee established by AB 803, has implemented several new programs under the auspices of the Educational Technology Local Assistance Program. To ensure that limited state funds would have as wide an impact as possible, several program management principles have been adopted. These also serve as important parameters for the long-range implementation strategies presented below. They are:

Technology as an Educational Tool: Teachers in all grade levels have demonstrated effectively that electronic technology can be a powerful instructional tool in many learning situations. As a result of these

experiences, a basic assumption inherent throughout this Long-Range Plan is that teachers and students will acquire basic technological literacy through systematic use of technology throughout the instructional program. Even more important, the use of electronic technology as an important instructional tool throughout the curriculum will contribute to the development of important life-long learning skills such as the ability to communicate in writing, techniques for acquiring and managing information and data, and the use of problem-solving strategies to make and test hypotheses.

Basic and Advanced Technological Literacy: Our graduates need to be technologically-literate, not only to become successful wage earners, but also to take advantage of an ever increasing array of technology-based tools used in their daily lives. As noted above, in the near future, students will acquire essential basic technology skills primarily through the regular use of technology in instructional programs. At the same time, secondary schools should offer motivated or specially skilled students the opportunity to complete more advanced courses that emphasize the development of specialized technology skills, such as computer programming using more sophisticated languages and electronic systems design.

Planning for Educational Technology: At both the school and district level, administrators and teachers, along with interested business and community "partners," must undergo specific planning processes in order to ensure effective use of new educational technology resources. The introduction of technology can and should have a significant impact on the classroom environment. Therefore, teachers must be prepared to make conscious changes in how they manage their classrooms and their lessons, how they organize their students, and how they interact with their students during the school day.

School Control and Commitment: At the school level, the faculty must be given responsibility for planning and implementing the use of educational technology resources. As is true with other reform efforts, state-funded educational technology programs must be organized to allow teachers, individually, and in groups, to utilize technology in ways that are relevant to their classroom styles and the instructional needs of their students. This flexibility is essential, so that teachers can develop a strong personal commitment to making new programs successful.

PROGRAM LEADERSHIP STRATEGIES

The process of transforming the classrooms of today into learning centers of the future will require a variety of state and local initiatives that are clearly focused and implemented in a carefully coordinated manner. In California, two leadership strategies are essential in order for the Long-Range Plan to be implemented effectively. These strategies are:

State, Regional, and Local Partnerships: Because of the magnitude of the investment needed and the potential impact on all parts of the educational system, a collaborative partnership-building effort must involve a wide variety of regional and local support agencies. Thus, a major leadership strategy will emphasize support for the systematic development of

partnerships, involving both public and private groups, to address each of the six program components in this Plan. Specific area partnerships will focus on initiating support for the technology-intensive demonstration schools. Regional partnerships will be needed to support extensive school-level initiatives possible through small scale grant programs, such as the existing Educational Technology Adoption/Expansion Grant Program. Many such partnerships already exist; others will need to be formally created.

State Educational Technology Funding: A Catalyst to Enhance Existing Resources: Funds allocated for the total Educational Technology Local Assistance Program are not intended to be sufficient for accomplishing the goals of this Long-Range Plan. Thus, a second strategy will be to utilize funding mechanisms which provide the most cost-effective services possible and which take advantage of additional resources, from both public and private sources. This cooperative strategy will be essential in obtaining extensive resources needed to support the network of technology-infused demonstration schools, for regional technical assistance partnerships, for curriculum and staff development efforts, as well as for expanding extensive school-level efforts already underway using existing LEA resources. Business and industry support, fostered by developmental grants, will be an essential part of the overall implementation of this Long-Range Plan.

III. IMPLEMENTATION OF A COMPREHENSIVE EDUCATIONAL TECHNOLOGY PROGRAM

This part of the Plan describes the six program components which provide the structure for implementing this Educational Technology Long-Range Plan:

Component 1: Technology-Infused Demonstration Schools

Component 2: Leadership

Component 3: Staff Development

Component 4: Instructional Materials

Component 5: Hardware

Component 6: Facilities

Each of the six program components includes a goal, background statement, objectives, and implementation strategies. While presented as separate components to provide a structure for implementation strategies and commitment of fiscal resources, each component is interrelated with the others.

COMPONENT 1:

TECHNOLOGY-INFUSED DEMONSTRATION SCHOOLS

GOAL: TO DEVELOP TECHNOLOGY-INFUSED DEMONSTRATION SCHOOLS TO EVALUATE THE APPROPRIATE USE OF TECHNOLOGY IN SITE MANAGEMENT, INSTRUCTIONAL MATERIALS, AND DELIVERY OF INSTRUCTION

BACKGROUND

Expansion of electronic technology has progressed at an explosive pace during the 1980's. The rate of computer hardware development alone substantially exceeded the ability of the instructional and administrative process to keep pace. One now can predict with a high degree of certainty the development of an integrated information center with video, audio, and text presentation capabilities, united under control of a central processor. This presents the exciting possibility of developing learning stations which can simulate the student-teacher interaction of a one-on-one or small group environment.

By 1991, such systems likely will have available, at a minimum, high capacity storage devices, high resolution touch screens and interfaces for interactive video, CD-ROM players, "mice", drawing tablets, voice input and voice recognition, and other appropriate technologies. Operating under control of a management system which would routinely perform today's many administrative tasks, such a system could offer efficiencies in learning and instructional management far beyond what has been achievable with past technology. Indeed, the foreseeable possibilities in educational technology of the 1990's will encourage the rethinking of the educational process as we know it today.

At the same time, the simple availability of this array of sophisticated technology will not guarantee its effective use in education, much less its cost-effectiveness, without careful planning, extensive staff development, and systematic implementation processes. Educational policy makers, administrators, and especially teachers, will have to be convinced that such resources can be utilized to enhance the learning environment in many diverse communities in order for them to justify the costs, both financial and personal, involved in undertaking a major transition to technology-based educational systems. The effectiveness of such systems, and the capacity of schools to adopt them, must be demonstrated convincingly in order for such changes to occur during the next 5-10 years.

OBJECTIVES AND STRATEGIES

Because of the magnitude of the investment involved and the potential impact on the educational system, this effort to develop technology-infused demonstration schools will have a number of interrelated components. Each of these is stated as a separate objective in order to provide a means for

assessing the degree to which each is implemented; however, all four components must be integrated carefully for this long-term effort to be fully successful.

By developing a network of technology-infused demonstration schools, the state will:

- Demonstrate the practical use of diversified technology-based resources which support the state's overall curriculum reform effort.

- Determine what types of administrative and logistical systems are needed to manage technology-infused schools.

With the assistance of cooperating regional agencies, such as the Teacher Education and Computer Centers (TECCs), Instructional Television (ITV) Agencies, and County Media Centers, the state will:

- Assess what kinds of staff development services are most effective in assisting school faculty to utilize technology-based resources across the curriculum.

- Determine what type of technical assistance services are needed to support a school-in-transition on a concentrated, long-term basis.

With the support of a research and evaluation team, the state will:

- Measure the impact of the total program on student achievement and other measures of change.

- Assess the impact of the total program in terms of organizational and curriculum changes used by the school to implement a technology-based instructional program.

With the assistance of regional centers, higher education, and the participating schools, the state will:

- Establish a comprehensive dissemination plan in order to assist interested schools to implement their own technology-infused curriculum program.

- Provide systematic research results to policy makers throughout the state to assist them in determining whether resources should be provided for similar programs to be implemented on a wide scale.

COMPONENT 2:

LEADERSHIP

GOAL: TO PROVIDE A LONG-RANGE VISION AND TO STIMULATE BROAD COMMITMENT TO THE ACHIEVEMENT OF A COMPREHENSIVE IMPLEMENTATION PLAN WHICH PROMOTES UTILIZATION OF TECHNOLOGY AS AN EFFECTIVE EDUCATIONAL TOOL

BACKGROUND

California has a large and influential "grass roots" movement of teachers who have begun to utilize technology in the classroom. This group represents a base of support for building a comprehensive educational technology program in California. At the same time, because of the diversity throughout this "grass roots" movement, a clearly stated common sense of purpose is lacking. To be of assistance, business and industry, as well as higher education institutions, need a foundation through which to provide their potentially substantial resources in a far more cost-effective manner.

Similarly, for educational technology to begin to have an extensive impact in enhancing learning opportunities for students, there must be a knowledgeable, influential group of leaders at all levels of California's educational system. These leaders, from California's schools and school boards, to the State Board of Education, and the State Legislature, must be convinced that the use of technology in education can have an important, positive impact on students and can be managed efficiently by thousands of teachers.

In addition, there must be sufficient state fiscal support available to serve as a catalyst to enable districts to provide training and acquire technology-based instructional materials and hardware. With a foundation in place, schools will have the capability to utilize numerous other resources which can be productively channeled into the school environment in a positive manner. Certainly the availability of state funding alone will not guarantee that schools and teachers will implement effective programs or that cooperative partnerships with business and industry will proceed on a regional level. But without sufficient state funding, the opportunity to draw on and utilize other resources in a comprehensive program will be unlikely.

OBJECTIVES AND STRATEGIES

The primary purpose of state leadership will be to foster comprehensive district programs which also include support from industry, higher education, regional educational agencies, community groups, and especially parents. To accomplish this, the State Department of Education, with the advice of the State Educational Technology Committee, will continue to solicit appropriate funding needed to assist local educational agency efforts to develop a foundation of hardware, software, and skilled administrators and teachers needed to implement technology-enhanced classroom programs. State funding will also be necessary to support regional agencies in order that essential technical assistance services are available to assist districts in effectively planning for and introducing technology-based programs throughout their schools.

There are four major leadership objectives:

- The state's fiscal commitment for a comprehensive educational technology local assistance program will be maintained.

- Local assistance fiscal policies and support services networks will be structured to promote careful school planning and to encourage the implementation of cost-effective instructional and administrative programs which emphasize the use of technology to improve the learning environment for all students.

- A comprehensive technology-based communications system will be implemented in order to give administrators, teachers, and students cost-effective, rapid access to diverse information resources, and to facilitate the overall process of informed decision-making in schools throughout the state.

- School support services, emphasizing long-term staff development and in-depth technical assistance services, will be provided to schools through cooperation with a variety of regional agencies, higher education institutions, specialized professional curriculum organizations, and business and industry education partnerships.

The Department of Education will utilize the following strategies to accomplish these objectives:

- Maintain ongoing communication with the State Board of Education, fiscal agencies, and legislative leaders to provide statistical data and evaluation materials which document the results of the local assistance program.

- Develop a long-range telecommunications pilot program to provide school faculty and students access to inter-connectable information exchange services and to determine what types of information resources are useful in a comprehensive curriculum reform process.

- Based on extensive advice from educational technology experts, establish and refine local assistance program guidelines which encourage:

  - comprehensive school-level planning;
  - maximum use of diverse local resources, public and private;
  - continuing reassessment of new technology which can improve student learning;
  - systematic phase-in of new hardware in conjunction with staff training; and
  - a continuing exchange of ideas and information essential in California's decentralized educational system.

- Provide fiscal resources to support regional services, particularly those emphasizing staff development and curriculum planning, that are responsive to the diversity of needs that exist across the state. These regional agency services, including partnerships with higher education and business and industry, are an essential part of the educational reform process that must occur in every classroom in order to have an impact on every student.

COMPONENT 3:

STAFF DEVELOPMENT

GOAL: TO ASSIST TEACHERS AND ADMINISTRATORS TO DEVELOP SKILLS NEEDED TO INCORPORATE THE EFFECTIVE USE OF TECHNOLOGY ACROSS THE CURRICULUM

BACKGROUND

Within the context of educational reforms now being initiated in California, the need to improve the skills of teachers and administrators is a primary concern. Teachers are being challenged to raise the academic standards of their curriculum and to develop more effective techniques for managing classes which are composed of students who are increasingly multi-ethnic and who have significantly different styles of learning. To highlight the magnitude of the task ahead, a new generation of teachers and administrators, numbering as many as 100,000 by 1990, must be recruited, properly prepared, and introduced into these increasingly complex school environments.

High-quality educational technology resources are already available to enhance virtually every area of the school curriculum, along with powerful tools to assist administrators to strengthen existing school management and evaluation systems. For these to be used effectively, all school staff need to acquire an appreciation of the positive impact that this diverse array of technology-based resources can have, and to develop the skills necessary to use these resources efficiently and effectively. As colleges of education undertake plans to align their pre-service training programs with curriculum reform, the opportunity exists to integrate technology into classes addressing both specific content areas, as well as instructional methodology in general. As regional agencies, districts, and individual schools develop in-service programs to revitalize teachers' skills and methods, it will be essential to include training in the use of new technology-based resources. Such programs also need to include effective, long-term, easily accessible support services that reinforce new teaching strategies and new curriculum approaches.

OBJECTIVES AND STRATEGIES

In a state the size of California, a wide variety of well-designed in-service programs are already available for teachers and administrators, many of which utilize partnerships involving university faculty, regional agency curriculum specialists, and experienced teachers. Clearly, these programs should be a major part of a comprehensive effort to assist teachers and administrators to incorporate technology-based resources into their curriculum reform efforts. To implement a comprehensive staff development effort, four major objectives have been established:

- Ensure that teachers graduating from teacher preparation institutions have sufficient knowledge and skills to use technology-based resources effectively in the classroom.

- Ensure that training programs conducted by regional agencies and higher education organizations incorporate technology-based resources as an integral part of their curriculum and delivery strategies.

- Organize alternative models of technology-based training to determine which are responsive to the varying needs of districts throughout the state.

- Ensure that a large number of schools have the necessary resources to enable teachers to participate in training programs according to locally-determined plans to integrate technology across the curriculum.

To accomplish these objectives, the Department of Education will give primary emphasis to the following strategies:

- Assist the Commission on Teacher Credentialling to establish regulations and guidelines for coursework necessary for the clear credential to promote the competence of new teachers in using technology in their curriculum.

- Assist institutions of higher education to integrate course content developed as part of the summer technology training institutes into regular pre-service programs.

- Through direct fiscal support and the distribution of other technology-based resources, assist regional agency programs (e.g., TECCs, ATCs, ITV agencies, county media services) and other staff development networks (e.g., California Writing and Math Projects, California Council for Economic Literacy) to provide in-depth training and ongoing technical assistance responsive to the needs of school faculty in their regions.

- Develop and evaluate alternative training models in cooperation with appropriate agencies and organizations, such as:

    - intensive summer residential institutes with year-long follow-up collaboration of participants;
    - short-term intensive curriculum integration seminars to address critical teaching needs (such as advanced science) and organizational change issues, including training in computer science and advanced technologies
    - client-specific training programs, particularly for administrators, using regional centers;
    - on-site workshops conducted by demonstration schools and effective curriculum integration projects; and
    - "distance" extension-type courses and seminars for a widely dispersed audience, particularly those located in rural areas, utilizing two-way audio and visual technologies.

- Provide small scale grants directly to districts and schools, which will allow teachers to take advantage of training programs which address their specific needs in an appropriate manner.

COMPONENT 4:

INSTRUCTIONAL MATERIALS

GOAL: TO ASSURE THE DEVELOPMENT AND DISTRIBUTION OF THE HIGHEST QUALITY TECHNOLOGY-BASED INSTRUCTIONAL MATERIALS, INCLUDING VIDEO PROGRAMMING, COMPUTER SOFTWARE, INTERACTIVE VIDEO AND PRINTED SUPPORT MATERIALS, IN ALL AREAS OF THE CURRICULUM AND AT ALL GRADE LEVELS IN A COST-EFFECTIVE MANNER

BACKGROUND

Just as there is a need for sufficient quantities of appropriate hardware, there is a critical need for high-quality technology-based instructional materials for all areas of the curriculum and at all grade levels. (It should be noted that the term "technology-based instructional materials" in this section, and throughout this plan, includes computer software, as well as video and videodisc programs, and utilizes all modes of presentation.) More sophisticated instructional materials using a wide variety of hardware appear on the market daily. Although there have been significant improvements in the quality of technology-based instructional materials recently, there are still "holes" in the curriculum for which no adequate programs exist, and for which it makes sense to use technology.

Moreover, few, if any, developers support program development to the extent that it reflects state-of-the-art use of technology, as well as what is currently known about instructional design. This is due primarily to the market risks inherent in such development. That is, not only are research, development, and marketing costs extremely high for such an approach, but the return on investment would be almost impossible to estimate, due to the uncertainty of demand for a presumably high-cost package of materials.

It is important for the state to take an active role in this area, if only to illustrate to the software and programming industry the nature and quality of what educators would like to see developed. California is the largest educational market in the country and, as is the case with textbooks, clear direction from the state can have enormous influence on what is produced. It is essential that a proactive strategy be established and carried out to influence the development of high-quality technology-based materials that are carefully integrated with the curriculum of the schools.

Finally, the quantity of technology-based instructional materials is increasing dramatically. Administrators, curriculum specialists, and teachers throughout California do not have the resources to determine the quality of all these new products, much less the time to incorporate them into their curriculum in an effective manner. Using a structured evaluation process with specified standards of quality, the state can minimize review costs and produce curriculum resource guides and classroom instructional models which both highlight the key features of high-quality materials and encourage their effective integration into a comprehensive, rigorous core curriculum.

OBJECTIVES AND STRATEGIES

To meet the goal of promoting greater access to the highest quality technology-based instructional materials, four major objectives have been established:

- Ensure that technology-based materials, especially computer software and video programming, are aligned with the core curriculum to enhance student motivation and achievement.

- Ensure the development of several prototype models of technology programs to illustrate to developers the nature, scope, and quality of programs needed to take full advantage of technology as an instructional tool.

- Ensure that all schools are knowledgeable about high-quality materials and how these materials can be integrated with existing course materials.

- Maximize the access of high-quality technology materials to all schools at the lowest possible cost through participation in national buying cooperatives and delivery systems.

To accomplish these objectives, the Department of Education, in close cooperation with business and industry and with regional technical assistance agencies, will undertake a long-range set of strategies:

- With the assistance of curriculum development specialists, develop and annually review standards and guidelines to be used to evaluate the quality of technology-based instructional materials.

- Establish policies and guidelines to define the role of technology-based programs in California's instructional materials adoption process.

- Through partnerships with appropriate regional and local agencies, develop and disseminate curriculum resource guides and classroom instructional models that correlate high-quality technology-based instructional materials with the California curriculum frameworks.

- Establish curriculum specifications for exemplary computer software, video programming, and videodisk materials and develop selected products through partnerships with business and industry partners.

- Participate in multi-state consortia to develop technology-based systems to distribute programming far more efficiently than is currently possible.

COMPONENT 5:

HARDWARE

GOAL: TO PROMOTE ACQUISITION AND INTEGRATION OF TECHNOLOGICAL HARDWARE FOR MAXIMUM EFFECTIVENESS IN CALIFORNIA SCHOOLS

BACKGROUND

The information explosion facing both teachers, and students, now requires school systems to carefully consider what kind of equipment can best provide access to the multiple sources of information needed to enhance a diverse school curriculum. Electronic information systems, properly structured for educational purposes, can provide such access. Within the classroom, the use of technology-based instructional materials now requires new sophisticated equipment that can easily be misused or under-utilized without proper planning; planning that not only provides direction regarding the amount of equipment needed, but also addresses the need for realistic classroom logistical strategies, including sufficient maintenance services, and sufficient instructional materials.

Today, schools throughout California do not have sufficient quantities of computer and video equipment, nor instructional materials, needed to implement comprehensive technology-based instructional services that can effectively support the classroom curriculum. In addition, the hardware industry continues to develop more sophisticated, efficient equipment at a rapid rate. Because equipment capability and price are likely to be very volatile for the foreseeable future, schools face the challenge of deciding what products to buy, when, and at what price, knowing full well that changes will occur regularly.

Finally, since the "market" for educational technology products will continue to expand, the hardware industry should play a significant role in fostering the development of electronic tools and systems which are designed or adapted specifically for educational use. As new specialized peripheral devices, mass storage systems, computer-managed video systems, and other innovations emerge, the hardware industry and educational planners must be linked together to be sure that the educational system is prepared to use these powerful technologies to enhance the educational environment.

OBJECTIVES AND STRATEGIES

Because of the decentralized nature of the school system, most hardware acquisition decisions must be made locally. At the same time, in order to promote long-term strategies of value to education, the broader hardware industry must be involved in a more centralized interactive fashion. Thus, the state's objectives and strategies with regard to hardware include separate components; one focusing on promoting effective school use of hardware, the other on maintaining cooperative partnerships with business and industry.

- All schools should develop a "foundation" program in order to acquire at least a basic quantity of hardware; such a program should permit each

elementary student access to computer-based instruction at least one hour per week and secondary students two hours per week.

- The hardware industry, in cooperation with educational specialists, will conduct long-range planning and development programs to ensure that new technologies will be utilized effectively to enhance the school curriculum.

To accomplish these objectives, the Department of Education, with the advice of the state Educational Technology Committee, will undertake the following strategies:

- Administer the small grant Adoption/Expansion Program which allows schools to develop individual plans to acquire hardware and implement instructional programs in response to local needs.

- Provide curriculum development grants designed to demonstrate effective use of new technologies as they are introduced, such as mass storage devices, video disk systems, and peripheral equipment with specialized functions.

- Organize appropriate school-industry partnerships that promote discounts and donations for specific demonstration programs.

- Develop and disseminate guidelines for evaluating the applicability and effectiveness of new hardware in a school setting.

- Maintain ongoing communication with business and industry leaders to promote appropriate research and testing of new hardware consistent with the needs of the educational system in California.

COMPONENT 6:

SCHOOL FACILITIES

GOAL: TO ENSURE SCHOOL FACILITIES POLICIES SUPPORT LEA INITIATIVES TO CONSTRUCT TECHNOLOGY-INFUSED SCHOOL ENVIRONMENTS

BACKGROUND

California schools attempting to integrate new technologies for both administrative and classroom functions have had difficulty in obtaining adequate space, power, and telecommunications capability. Current building specifications for California schools were developed before new space, power, and telecommunications needs were understood. Schools attempting to utilize new technologies have faced a lack of information about the best school and classroom design and installation costs. Adequate and flexible specifications for space, power, and telecommunications are necessary for schools to make effective, efficient use of new technology. Technologically-smart schools are now being built to house a variety of uses. Their flexibility allows for growth and changes in the use of the facility. Experience in the development and construction of technologically-smart schools can assist in the development of specifications for statewide construction requirements of all new school facilities.

OBJECTIVES AND STRATEGIES

Schools built during the next five years should be constructed in order to permit easy installation and use of new technology that will be essential in preparing students for the demands of the 21st century. To meet this goal, two major objectives have been established:

- Develop statewide school construction specifications which include appropriate space, power, and telecommunications standards needed by technology-infused schools.

- Support adequate state funding necessary to construct or remodel schools which meet these standards.

To achieve these objectives, the Department of Education will initiate the following strategies:

- In cooperation with appropriate business and industry leaders and district administrators, prepare flexible space, power, and telecommunications standards that will be used when districts construct new schools or remodel existing buildings.

- Develop financial incentives for districts that construct or remodel schools according to these new standards.

- Seek legislative commitment to obtain state fiscal resources that support the need to construct schools according to these new standards.